STS-105 (BI109)
FLIGHT READINESS REVIEW

PROGRAM

August 1, 2001

Solid Rocket Booster

United Space Alliance

AGENDA

Presenter:
Roger Elliott

Organization/Date:
USA-SRB/8-1-01

- Changes Since STS-104/BI108
  - New Design Fuel Isolation Valve (FIV)
- Readiness Assessment

CLASS I CHANGES SINCE STS-104

Presenter:
Roger Elliott
Organization/Date:
USA-SRB/8-1-01

Incorporates New Design Single Fuel Isolation Valve (FIV)

- Background
  - FIV provides redundancy to preclude inadvertent introduction of hydrazine into APU gas generator
  - FIV failed DWV during testing 11/92
    - Second failure 1/96
    - Exposure to hydroxyacetic acid and Turco cleaner attacked poppet bellows assembly
      - Resulted in intergranular corrosion
      - Allowed hydrazine introduction past bellows into electrical cavity
        - Criticality 1 failure
    - Additional leak check and on pad testing incorporated to allow continued flight
    - Replacement FIV design and qualification authorized by Program in 1996

CLASS I CHANGES SINCE STS-104

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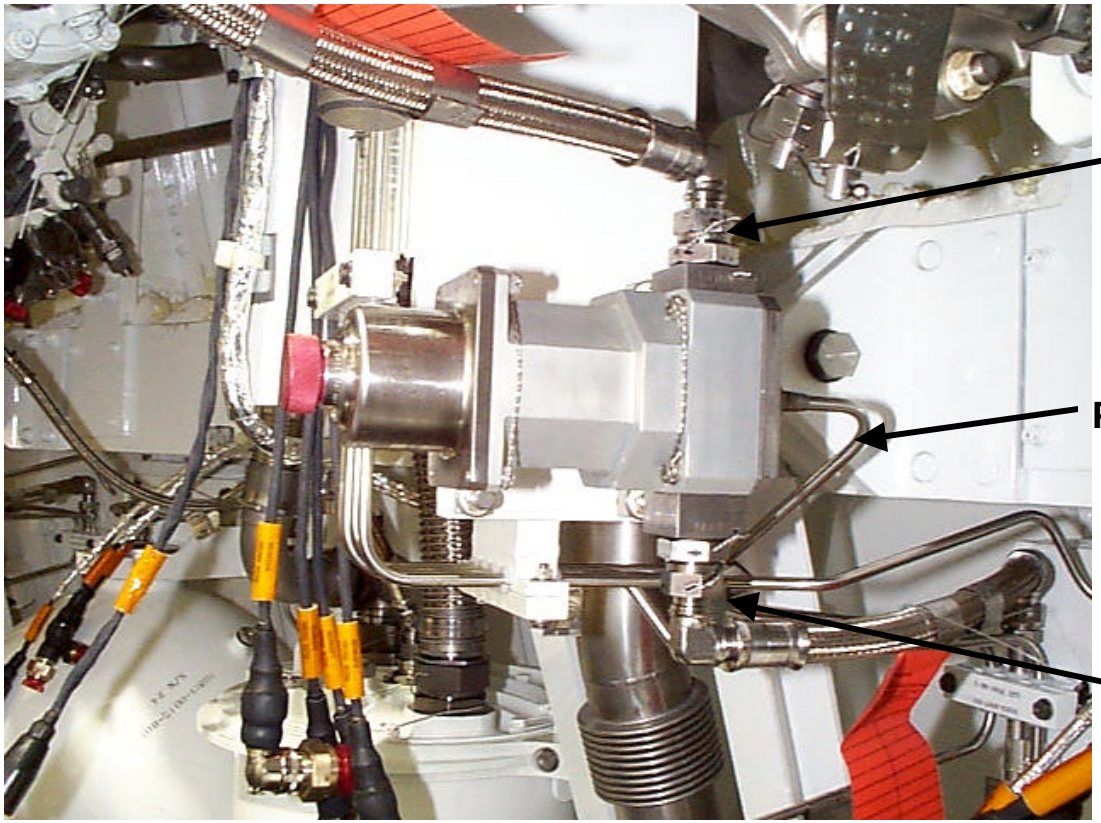

New Design Single Mission FIV

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Incorporates New Single Mission Design FIV (cont.)

- New valve is of annular nozzle design
  - Same basic fluid design as Orbiter FIV
- Valve switch assembly does not use bellows or mechanical linkage
  - Magnetically actuated switch
  - Valve offers non-flexing weldment separation of fluid and electrical cavities
- Valve protected by 40 micron inlet filter
- Valve retains same envelope, fluid fittings, electrical connector, power requirements, transient suppression and dual position switch feedback as current design valve

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Incorporates New Design Single Mission FIV (cont.)

- Basis for Certification is Qualification Test and Analysis
  - Full development and qualification testing performed
  - Qualification testing accomplished on 2 units
    - Proof pressure/external and internal leakage
    - Vibration/shock/acceleration/water entry loading
    - Thermal/Electrical testing
    - Flow delta pressure testing
    - Seawater immersion/pressurized immersion
    - Thermal shock/salt fog
    - Burst/collapse
    - Life cycle testing
    - Disassembly inspection

READINESS ASSESSMENT

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- Pending completion of planned open work, there are no constraints to flight for STS-105

CERTIFICATION SHEET

Presenter:
Roger Elliott

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USA-SRB/8-1-01

STS-105 (BI109) Flight Readiness Review

Pending satisfactory completion of open items and normal operations flow, we certify the Booster Assembly hardware ready to support the launch of STS-105

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BACKUP CHARTS

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FUEL ISOLATION VALVE BACKUP

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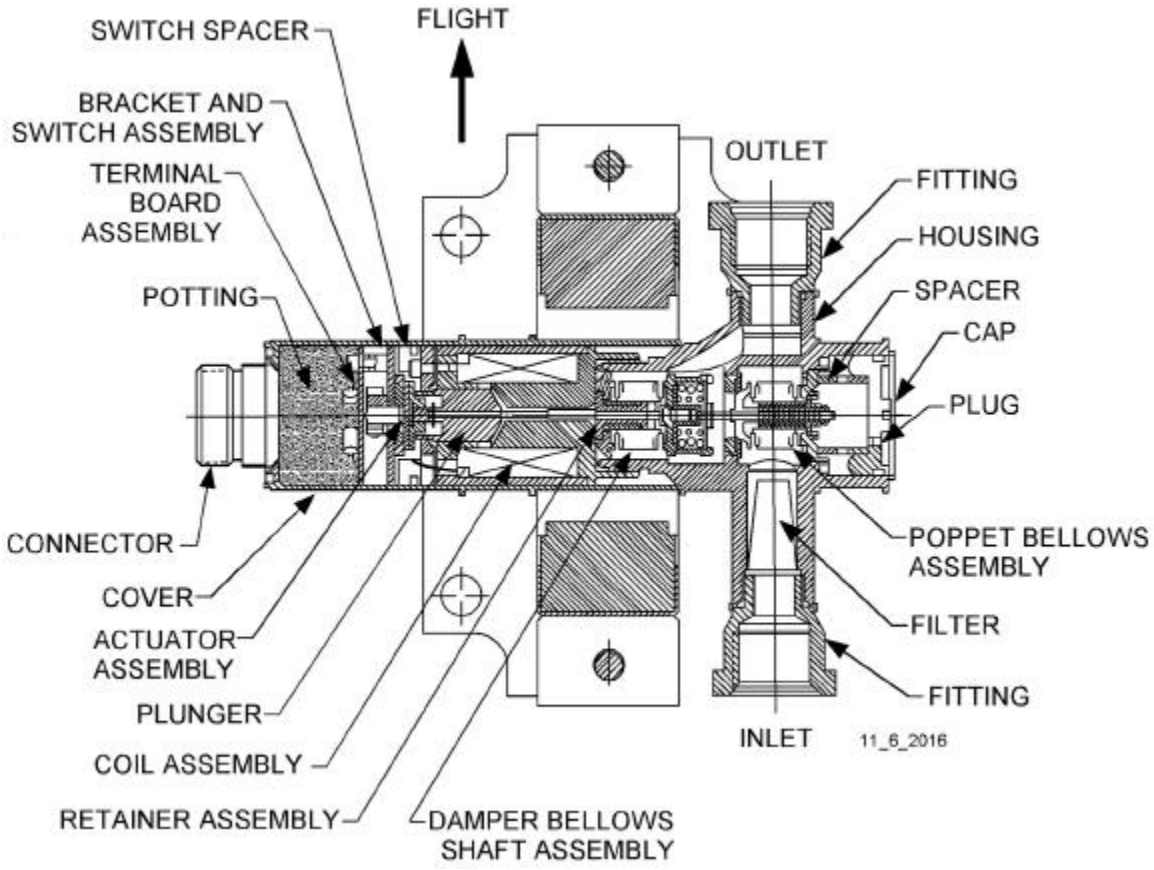

CURRENT FIV DESIGN CROSS SECTION

United Space Alliance

FUEL ISOLATION VALVE BACKUP

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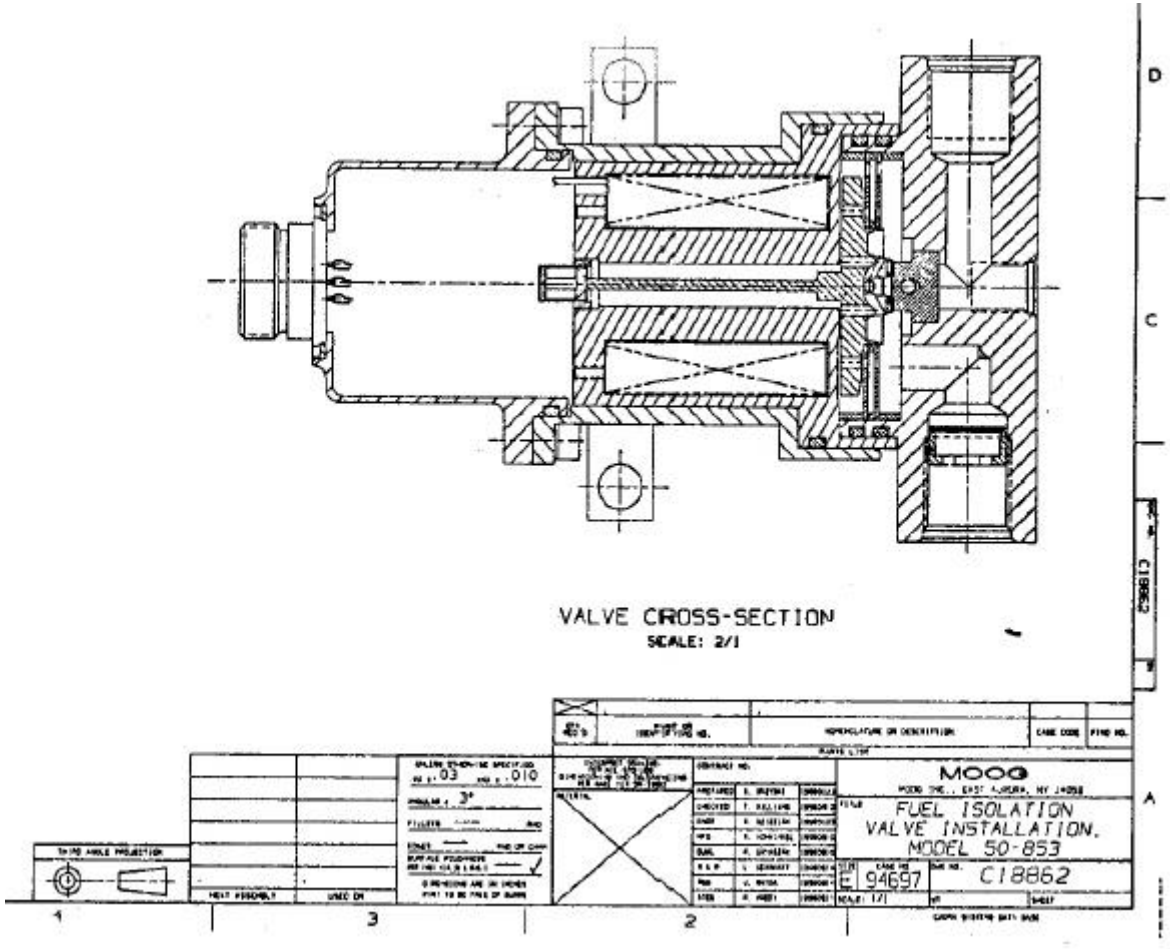

NEW FIV DESIGN CROSS SECTION

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